1 **What is claimed is:**
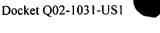
2   1.   A USB system for data communication between a processor and

3 IDE devices, comprising:

4   a plurality of IDE devices;

5   a plurality of USB-to-IDE bridges, wherein each IDE device is

6 connected to a respective USB-to-IDE bridge; and

7   a USB controller, wherein the USB-to-IDE bridges are connected to

8 the USB controller, whereby the processor can communicate with the IDE

9 devices via the USB controller.

10

11   2.   The system of claim 1, wherein at least one of the IDE devices

12 comprises a hard disk drive.

13

14

15   3.   The system of claim 1, further comprising one or more USB hubs,

16 each USB hub connected between two or more USB-to-IDE bridges and a USB

17 controller.

18

19   4.   The system of claim 1, wherein each IDE device can be utilized in

20 hot plugging.

21

22   5.   The system of claim 1, wherein one or more IDE devices can be

23 disconnected from the system while the system is operating.

24

25   6.   The system of claim 1, wherein at least one additional IDE device

26 coupled to a corresponding USB-to-IDE bridge can be connected to the USB

27 controller while the system is operating.

28

29   7.   The system of claim 1, further comprising at least one USB hub

30 connected between a number of the USB-to-IDE bridges and one of the USB

1 controllers, whereby the processor can communicate with the IDE devices via the

2 USB controller and the USB hub.

3

4 8.　　The system of claim 7, wherein one or more IDE devices can be

5 disconnected from the system while the system is operating.

6

7 9.　　The system of claim 1, wherein at least one additional IDE device

8 coupled to a corresponding USB-to-IDE bridge can be connected to the hub

9 while the system is operating.

10

11 10.　　A method for connecting multiple IDE devices to a processor for

12 data communication, comprising the steps of:

13 　　providing multiple USB-to-IDE bridges;

14 　　connecting each IDE device to a respective one of the USB-to-IDE

15 bridges;

16 　　providing a USB controller; and

17 　　connecting the USB-to-IDE bridges to the USB controller, whereby the

18 processor can communicate with the IDE devices via the USB controller.

19

20 11.　　The method of claim 10, wherein at least one of the IDE devices

21 comprises a disk drive.

22

23 12.　　The method of claim 10, further comprising the steps of hot

24 plugging one or more IDE devices to the USB-to-IDE bridges.

25

26 13.　　The method of claim 10, further comprising the steps of

27 disconnecting one or more of the IDE devices from the system while the system

28 is operating.

29

1   14.   The method of claim 10, further comprising the steps of connecting

2   at least one additional IDE device coupled to a corresponding USB-to-IDE

3   bridge, to the USB controller while the system is operating.

4

5   15.   The method of claim 10, further comprising the steps of:

6   providing at least one USB hub;

7   connecting each hub to a USB controller; and

8   connecting two or more USB-to-IDE controllers to each hub, such that

9   each hub is connected between a USB controller and two or more USB-to-IDE

10   controllers.

11

12   16.   The method of claim 15, further comprising the steps of

13   disconnecting one or more of the IDE devices from the system while the system

14   is operating.

15

16   17.   The method of claim 15, further comprising the steps of connecting

17   at least one additional IDE device coupled to a corresponding USB-to-IDE

18   bridge, to one of the hubs while the system is operating.

19

20   18.   A data storage system, comprising:

21   a plurality of IDE storage devices;

22   a plurality of USB-to-IDE bridges, wherein each IDE storage device

23   is connected to a respective USB-to-IDE bridge; and

24   a USB controller, wherein the USB-to-IDE bridges are connected to

25   the USB controller, whereby the processor can communicate with the IDE

26   storage devices via the USB controller.

27

28   19.   The data storage system of claim 18, further comprising a carrier

29   for each IDE data storage device, such that each IDE disk drive and

30   corresponding USB-to-IDE bridge are stored in the respective carrier.

31

1   20.   The data storage system of claim 18, wherein one or more IDE

2   storage devices can be disconnected from the system while the system is

3   operating.

4

5   21.   The data storage system of claim 18, wherein at least one

6   additional IDE disk device coupled to a corresponding USB-to-IDE bridge can be

7   connected to the USB controller while the system is operating.

8

9   22.   The data storage system of claim 18, further comprising at least

10   one USB hub connected between a number of the USB-to-IDE bridges and one

11   of the USB controllers, whereby the processor can communicate with the IDE

12   devices via the USB controller and the USB hub.

13

14   23.   The data storage system of claim 18, further comprising one or

15   more USB hubs, each USB hub connected between two or more USB-to-IDE

16   bridges and a USB controller.

17

18   24.   The data storage system of claim 23, wherein at least one or more

19   IDE storage devices can be disconnected from the system while the system is

20   operating.

21

22   25.   The data storage system of claim 23, wherein at least one

23   additional IDE storage device coupled to a corresponding USB-to-IDE bridge

24   can be connected to one of the USB hubs while the system is operating.

25

26   26.   The data storage system of claim 23, wherein at least one

27   additional IDE storage device coupled to a corresponding USB-to-IDE bridge and

28   associated hub, can be connected to the USB controller while the system is

29   operating.

30

1   27.   The data storage system of claim 23, wherein at least one IDE

2   storage device coupled to a corresponding USB-to-IDE bridge and associated

3   hub, can be disconnected to the USB controller while the system is operating.

4